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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,916	07/12/2001	Prabir K. Dutta	OSU1159-144	1865
8698	7590	11/12/2004	EXAMINER	
STANDLEY LAW GROUP LLP 495 METRO PLACE SOUTH SUITE 210 DUBLIN, OH 43017			TRIEU, VAN THANH	
			ART UNIT	PAPER NUMBER
			2636	

DATE MAILED: 11/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/903,916

Applicant(s)

DUTTA ET AL.

Examiner

Van T Trieu

Art Unit

2632

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7-25 and 27-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-25 and 27-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-4, 7-20, 25, and 27-29 are rejected under 35 U.S.C. 102(b) as being anticipated by **Yada et al** [US 6,531,704].

Regarding claim 1, the claimed sensor comprising a substrate (the catalytic substrate 101, 201 and/or 401, see Figs. 1b, 2, 4 and 10B, col. 7, lines 57-65, col. 8, lines 7-47, col. 10, lines 29-61 and col. 14 lines 47-49); and the first electrode (first electrode 102, 202 and/or electrode of device 401, see Figs. 1b, 2, 4 and 10B, col. 8, lines 7-30, col. 10, lines 38-40 and 62-67, col. 11, lines 1-6, col. 13, lines 20-42 and col. 14, lines 34-53); and the second electrode (the second electrode 102, 202 and/or electrode of device 401, see Figs. 1b, 2, 4 and 10B, col. 8, lines 7-30, col. 10, lines 38-40 and 62-67, col. 11, lines 1-6, col. 13, lines 20-42 and col. 14, lines 34-53); and the sensing material (the catalytic substrate includes layer of cuprous chloride material for selectively absorbing of carbon monoxide from the hydrogen gas stream, see Figs. 1B, 2, 4, 5 and 9, Table 5B and 7A, col. 3, lines 34-40, col. 6, lines 44-67, col. 7, lines 1-5 and 18-31, col. 8, lines 7-64, col. 13, lines 20-58, col. 17, line 63 and col. 26, lines 27-39).

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Regarding claim 2, the claimed alumina (see Table 1, col. 9, lines 15-35).

Regarding claim 3, the claimed first electrode is an interdigital electrode, which reads upon the programming circuit for operating the catalytic processing, see Figs. 1-3, col. 4, lines 41-61.

Regarding claim 4, the claimed second electrode is an interdigital electrode, which reads upon the programming circuit for operating the catalytic processing, see Figs. 1-3, col. 4, lines 41-61.

Regarding claim 7, the claimed halide (the sensing material is halide, see col. 12, line 8).

Regarding claim 8, the claimed heater (the sensor 101,201 or 401 is heated by a temperature condition, see col. 11, lines 24-29 and col. 15, lines 22-43).

Regarding claim 9, all the claimed subject matters are cited in respect to claim 8 above, see col. 15, lines 22-57 and col. 25, lines 30-67.

Regarding claim 10, the claimed electrical property (electrical current and voltage, see col. 10, lines 62-67, col. 34, lines 14-67 and col. 35, lines 1-6).

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Regarding claim 11, all the claimed subject matters are cited in respect to claim 1 above, and including the hydrogen H<sub>2</sub>, see Tables 5A and 5B, col. 6, lines 49-51, col. 16, lines 45-65 and col. 17, lines 40-50).

Regarding claim 12, all the claimed subject matters are cited in respect to claim 11 above, see Tables 5B and 7A.

Regarding claim 13, all the claimed subject matters are cited in respect to claim 11 above.

Regarding claim 14, all the claimed subject matters are cited in respect to claims 10 and 11 above,

Regarding claim 15, all the claimed subject matters are cited in respect to claim 1 above as the multiplayer or multifunction gas sensor and the oxidized agent, see Tables 5A, 5B and 7A.

Regarding claim 16, all the claimed subject matters are cited in respect to claim 15 above.

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Regarding claim 17, all the claimed subject matters are cited in respect to claim 15 above and including the fuel cell in the chamber, see col. 20, lines 53-65 and col. 36, lines 56-63.

Regarding claim 18, all the claimed subject matters are cited in respect to claim 15 above.

Regarding claim 19, all the claimed subject matters are cited in respect to claims 15 and 17 above.

Regarding claim 20, all the claimed subject matters are cited in respect to claims 10 and 15 above.

Regarding claim 25, all the claimed subject matters are cited in respect to claims 1, see col. 3, lines 36-40 and col. 8, lines 7-63.

Regarding claim 27, all the claimed subject matters are cited in respect to claims 10 and 25 above.

Regarding claim 28, all the claimed subject matters are cited in respect to claims 7 and 25 above.

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Regarding claim 29, all the claimed subject matters are cited in respect to claim 1 above, and including the conduits, see Fig. 5.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 21-24 are rejected under 35 U.S.C. 102(e) as being anticipated by

**Chang et al** [US 6,474,138].

Regarding claim 21, the claimed sensor that can selectively detect a concentration of carbon monoxide in a hydrogen containing gas stream devoid of oxygen, the sensor comprising a sensing material wherein a majority of the sensing material is cuprous chloride CuCl (the carbon monoxide sensor 10 include CuCl material for selectively detecting of carbon monoxide concentration in a hydrogen or hydrogen-containing gaseous fuel, see Fig. 1, col. 2, lines 1-11 and col. 4, lines 23-27).

Regarding claim 22, the claimed concentration of carbon monoxide is between about 10 to about 2000 part per million, which reads upon the 0.00043 micromoles of carbon monoxide can be absorbed assuming a selective capacity of ten percent, see col. 4, lines 23-27.

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Regarding claim 23, the claimed hydrogen-containing gas stream is a reformed of fuel gas stream, see col. 2, lines 1-11.

Regarding claim 24, the claimed reformed fuel gas stream comprises carbon monoxide, carbon dioxide, hydrogen and nitrogen, see col. 3, lines 40-51.

### ***Conclusion***

3. Examiner is very regrettably to withdraw the issue filed on 30 March 2004 due to the new references of **Yadav et al** or **Chang et al** meet the claimed limitations as above.

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

**Goldstein et al** discloses an apparatus and method for determining the concentration of CO gas in a fuel reformat stream such as in a PEM fuel cell vehicle. The CO sensor includes a catalyst bed covers with CuCl material and attached with an inlet plate and an outlet plate. [US 6,429,019]

5. Any inquiry concerning this communication or earlier communications from examiner should be directed to primary examiner **Van Trieu** whose telephone number is (571) 272-2972. The examiner can normally be reached on Mon-Fri from 7:00 AM to 3:00 PM.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. **Jeffery Hofsass** can be reached on (571) 272-2981.

A handwritten signature in black ink, appearing to read 'Van Trieu', with a long horizontal flourish extending to the right.

**Van Trieu**  
**Primary Examiner**  
**Date: 11/10/04**